

April 19, 2006

JAMA NEWS RELEASES

(Embargoed for Release: 3 p.m. CT, Tuesday, April 18, 2006)

No Significant Differences In Neuropsychological Function or Kidney Function Found Among Children Whose Cavities Were Filled With Mercury-Containing Dental Amalgam Vs. Mercury-Free Dental Materials

Level of Education Attained Linked With Presence of Coronary Artery Calcium Deposits, An Indicator of Coronary Disease

Very Long or Short Intervals Between Pregnancies Associated with Increased Risk of Poor Perinatal Outcomes

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Media Advisory: To contact the corresponding author of the first study, Sonja M. McKinlay, Ph.D., call Lisa Marceau at 617-923-7747, ext. 511. To contact the corresponding author of the second study, Timothy A. DeRouen, Ph.D., call Clare Hagerty at 206-685-1323. To contact editorialist Herbert L. Needleman, M.D., call Jocelyn Uhl Duffy at 412-647-3555.

No Significant Differences In Neuropsychological Function or Kidney Function Found Among Children Whose Cavities Were Filled With Mercury-Containing Dental Amalgam Vs. Mercury-Free Dental Materials

CHICAGO - There were no statistically significant differences in neuropsychological and neurobehavioral effects among children whose dental caries were treated with mercury amalgam fillings and those treated with a composite dental restorative material, according to two studies in the April 19 issue of *JAMA*.

Dental (silver) amalgam is a widely used restorative material containing 40 - 50 percent elemental mercury that emits small amounts of mercury vapor, according to background information in the articles. Because mercury is an acknowledged neurotoxin, there are widespread concerns about the health effects of exposure to this metal. But no randomized trials have been previously published that address the concern that inhalation of mercury vapor released by amalgam dental restorations causes adverse health effects. It is estimated that more than 70 million dental amalgam restorations are placed annually in the U.S.

David C. Bellinger, Ph.D., M.Sc., of Children's Hospital Boston, and colleagues compared the neuropsychological and renal (kidney) function of children whose dental caries (cavities) were restored using amalgam or mercury-free materials. Between September 1997 and March 2005, the researchers studied 534 New England children, aged six to ten, who were randomly assigned to receive either amalgam or resin composite materials. The children had an average of 15 tooth surfaces restored during a five-year follow-up.

"In this study, there were no statistically significant differences in adverse neuropsychological or renal effects observed over the five-year period in children whose caries were restored using dental amalgam or composite materials," the authors report.

Children randomly assigned to the amalgam group had higher average urinary mercury levels than those in the resin-based composite group. But there were no statistically significant differences between the groups in terms of five-year change in full-scale IQ

score, four-year change in general memory index, visual motor composite score, or urinary albumin levels.

"Under the conditions of use represented in this trial, there is no reason to discontinue use of mercury amalgam as the standard of care for caries in posterior teeth," the authors conclude.

(*JAMA*. 2006;295:1775-1783. Available pre-embargo to the media at www.jamamedia.org.)

Editor's Note: This study was supported by a cooperative agreement between the New England Research Institutes and the National Institute of Dental and Craniofacial Research.

Use of Dental Amalgam Not Associated With Significant Neurobehavioral Effects

In another article in this issue of *JAMA*, researchers report that children with dental caries who were treated with mercury-containing amalgam did not have statistically significant differences in neurobehavioral assessments when compared with children who were treated with resin composite materials without amalgam.

Timothy A. DeRouen, Ph.D., of the University of Washington, Seattle, and colleagues studied 507 children, aged eight to ten, in Lisbon, Portugal, to assess the safety of dental amalgam restorations. From February 1997 to July 2005, children had an average of 18.7 tooth surfaces restored in the amalgam group and 21.3 restored in the composite group.

The authors found that children in the amalgam group had higher urinary mercury levels over seven years of follow-up. However, there were no statistically significant differences between the groups' scores on neurobehavioral assessments of memory, attention, visual motor function or on measures of nerve conduction velocity.

"In summary, this trial showed that children treated with dental amalgam did not, over a seven-year follow-up period, demonstrate statistically significant differences in

neurobehavioral and neurological test results compared with similar children treated with other dental materials," they conclude. "These findings, especially in light of the observed higher treatment need in the composite group five or more years after initial treatment, suggest that amalgam should remain a viable clinical option in dental restorative treatment."

(*JAMA*. 2006;295:1784-1792. Available pre-embargo to the media at www.jamamedia.org.)

Editor's Note: This work was funded by a cooperative agreement from the National Institute of Dental and Craniofacial Research of the National Institutes of Health. For the financial disclosures of the authors, please see the *JAMA* article.

Editorial: Mercury in Dental Amalgam - A Neurotoxic Risk?

In an accompanying editorial, Herbert L. Needleman, M.D., of the University of Pittsburgh School of Medicine, points out that even though the studies by Bellinger and colleagues and by DeRouen and colleagues "provide new important data in the health effects of mercury containing dental amalgam in children, there are limits to the inferences that can be drawn from these data."

"The studies by Bellinger et al and DeRouen et al represent thoughtful and important contributions to understanding the question of dental amalgam risks in children, but the question of more subtle effects remains open," he continues. "Given the numbers of children exposed to dental amalgam, it is critical that further rigorous studies examine the molecular effects of the toxicant at appropriate doses, measure exposure as precisely as possible, and explore the important question of vulnerability factors."

(*JAMA*. 2006;295:1835-1836. Available pre-embargo to the media at www.jamamedia.org.)

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